# Federal Role in Support of Technology-based Economic Development

Report of a Roundtable; December 4, 2000

This is a report of a roundtable discussion among state and local technology-based economic development policymakers and practitioners. The purpose of the roundtable, which was hosted at the Department of Commerce, was to discuss how the federal government might best assist state and community efforts to harness technology for economic growth. The views expressed are those of the roundtable participants, and do not necessarily represent the views of the Department of Commerce.

Prepared for the Office of Technology Policy, Technology Administration, USDOC



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#### OFFICE OF TECHNOLOGY POLICY

#### **Foreword**

This report summarizes a roundtable discussion on the Federal Role in Technology-Based Economic Development, hosted at the Department of Commerce on December 4, 2000 by the Office of Technology Policy (OTP). With the assistance of the State Science and Technology Institute (SSTI), OTP invited individuals with experience working at the state or local level, or academic expertise to share their insights on how the federal government can most effectively complement state and local efforts.

The roundtable discussion was designed to provide the Department with a variety of views on the federal government's role in supporting technology-based economic development and on the appropriate balance of responsibilities between the federal government, its state and local counterparts, and the private sector. OTP's experience with the Experimental Program to Stimulate Competitive Technology (EPSCoT) indicates that federal actions are most effective when they serve as a catalyst for, or complement, state and local activities.

OTP gained valuable insights from the discussion. The following report summarizes some of those insights and the discussion as it developed, and not in any particular order of priority or preference. The report is neither a consensus document, nor a conference proceeding, and does not necessarily reflect the views of the Department. However, the discussion and views expressed do provide valuable information on how the federal government might best assist states and communities to compete and win in the rapidly changing economy of the 21st century. The purpose of this publication is to share those insights with others who have an interest in the federal government's role vis-à-vis its state and local counterparts.

### I. Background

The nature of the American economy has been transformed in the last six years with a heavier emphasis on knowledge and technology. This rapidly changing economy, fueled by the Internet and information technology, is evidenced by the rise of e-commerce, the dotcom boom, and the spectacular increase in investments in technology companies. The results are apparent: new industries created, widespread attention to the potential for enormous wealth creation, and existing companies racing to transform themselves to compete in this new environment.

While the rise and fall of twentysomething dot-com millionaires is now familiar to all, there can be no denying that in less than a decade the American economy has undergone an unparalleled transformation. Concomitant with this transformation has been a growing realization that its benefits have been fairly localized and concentrated with major metropolitan areas on the East and West Coasts the prime beneficiaries. But even in states like California that have benefited seemingly in a disproportionate fashion from the New Economy, there are vast areas being left behind; for example, unemployment in December, 2000 was three to four times greater in some counties of the Central Valley—less than 100 miles from Silicon Valley—than the state rate of 4.3 percent.

Because of the sea change occurring in the economy and the fear of being left behind, states and localities have been trying to move rapidly to position themselves to take advantage of the transformation. For example, state support for technology-based economic development has increased dramatically during the past two years. States with long-established programs, such as New Jersey, New York, and Pennsylvania, have widened their portfolios of programs and increased their funding. New York alone appropriated \$145 million for the New York State Office of Science, Technology, and Academic Research for FY2001, an increase of more than \$100 million in just one year. States that have not made significant investments in the past, such as Kentucky and Michigan, have embarked on major new initiatives. In 2000, Kentucky passed a \$53 million Kentucky Innovation Act, and Michigan has committed \$1 billion over 20 years to develop a life sciences corridor.

State governments are funding research and development, investing in higher education, facilitating university-industry relationships, supporting technology commercialization, and investing in technology infrastructure. Increasing numbers of state governments are actively helping new and growing technology companies to improve worker skills and obtain financing and other support services.

Local governments and regional development organizations have also become active in promoting technology-based economic development. Indianapolis, New York City and St. Louis, for example, are in the process of implementing regional technology development strategies. The City of Chicago has undertaken a series of initiatives to promote technology development and to position Chicago as a leader in Information Technology. In addition, in some cities like San Diego, technology businesses have become the driving force in the region's economic growth.

However, while many states, regions, and communities recognize the importance of technology in today's economy and are making significant investments in technology-based economic development, others are unable or unwilling to make such investments. In some cases, lack of political support makes it difficult or impossible to fund technology-based economic development programs. Some state legislators from rural areas, for example, do not see how investments to support technology companies will benefit the agricultural and rural communities they represent. Other communities may recognize the need for investments in telecommunications infrastructure and education needed to support a technology-driven economy, but lack the tax base to make such investments. Many states with healthy, technology economies find that development is uneven with economic growth concentrated in a small number of metropolitan areas, and that some areas benefiting from the New Economy are experiencing the pains of expansion—congested highways, overpopulated public school systems, and other stresses on public services.

This imbalance is occurring at a time when countries as varied as Australia, India, and Ireland are making significant investments to building a technology-based economy. The European Union and several Asian countries are also investing billions of dollars. In the global economy, for the U.S. to continue to lead, it is in the national interest to have all regions and peoples participating in the changing economy.

Historically, technology-based economic development has been seen as the responsibility of state and local governments with minimal involvement from the federal government. The U.S. Department of Commerce has historically administered several programs designed to promote economic growth through the development and use of technology. In addition, the Department has historically supported economic development in distressed areas through the Economic Development Administration.

The Department of Commerce's Office of Technology Policy is the only office in the federal government with the explicit mission of developing and advocating national policies that use technology to build America's economic strength. The National Telecommunications and Information Administration (NTIA) is responsible for advising the President on telecommunications issues and works to improve access to advanced telecommunications products and services. NTIA helps state and local governments promote widespread use of telecommunications technology.

The National Institute of Standards and Technology (NIST) has historically administered two programs that have provided direct support for technology development and deployment. The Advanced Technology Program (ATP), through partnerships with private sector, has provided funding for early-stage, high-risk research and development projects. The Manufacturing Extension Partnership (MEP), which has been funded jointly by the federal and state governments, has supported a nationwide network of centers located in every state that provide assistance to small and medium size manufacturers.

In 1998, Congress created the Experimental Program to Stimulate Competitive Technology (EPSCoT). EPSCoT was created to improve the competitiveness of states and territories that have historically received less federal research and development funding. The program has provided matching grants to support technology development, deployment, and diffusion by promoting partnerships between state and local governments, universities,

community colleges, nonprofit organizations, and the private sector. Through these partnerships, EPSCoT has supported state and local efforts to build statewide institutional capacity to support technology commercialization, create a business climate conducive to technology development, deployment and diffusion, and compete in federal R&D programs. The program made two rounds of awards in 1999. No new funding was provided for the program in FY 2001, pending an evaluation.

Given the regional and demographic disparity in the benefits accruing from the changing economy, the increasing involvement of state and local governments in technology-based economic development, and the Department of Commerce's interest in promoting economic growth, particularly in disadvantaged or distressed communities, the Office of Technology Policy held a roundtable discussion on the "Federal Role in Technology-Based Economic Development" on December 4, 2000. The discussion was designed to provide input to OTP on what role the federal government, in general, and OTP, in particular, could most effectively play in technology-based economic development.

With assistance from the State Science and Technology Institute (SSTI), state and local technology-based economic development policymakers and practitioners were invited to participate in the roundtable discussion. Eighteen state and local officials representing thirteen states participated in the discussion. Participants were selected to reflect a wide range of point of views— state officials, local policymakers, academic researchers, those that have benefited from the changing economy, and others that are trying to extend the benefits to their region. A list of roundtable participants can be found in Appendix A. This paper summarizes the discussion at the roundtable.

### II. The Federal Role in Technology-based Economic Development

Given the general environment described above and their personal experiences, roundtable participants were asked to consider several questions concerning the federal role in technology-based economic development. In particular, what is the appropriate federal role, and beyond providing funds, what should the federal role include? There was strong consensus among the roundtable participants that the federal government has a critical role to play in supporting technology-based economic development. The participants suggested a variety of roles for the federal government that can be broken into four broad categories. The categories and specific roles are described below. The order in which they are presented should not be taken as an indication of their relative importance. The list of questions and discussion topics that the roundtable participants discussed is available in Appendix B.

#### Serving as the primary public funder of research and development

Setting the national agenda and serving as a primary funder of research and development. Above all else, roundtable participants considered the federal government's primary role in supporting technology-based economic development to be the federal government's support for research and development. The innovation process that is driving the economy flows directly from the support the federal government provides for R&D—whether through the National Science Foundation, the National Institutes of Health or other agencies and laboratories. For innovation and technology-based economic development to occur, new knowledge must continue to be generated and this will flow out of the R&D the federal government helps fund.

#### Bolstering capacity for building technology-based economies

Sponsoring pilot projects and disseminating data identifying "best practices." The participants suggested that the federal government could play an important role in developing new approaches and innovative practices in technology-based economic development by providing support for pilot projects and by disseminating information on "best practices." Participants suggested the federal government could track technology-based economic development activities underway across the country and provide funding to evaluate alternative approaches that are being used. The resulting information could then be shared with state and local officials enabling them to make better-informed decisions.

Helping build capacity in universities and state, regional, and local economic development organizations to undertake technology-based economic development programs. The participants acknowledged that while support for technology-based economic development has been growing steadily at the state and local level, there are states and regions that are not investing in the elements needed to support a knowledge-based economy. The federal government can use its resources to encourage such states and regions to increase their investments in higher education and technology-based economic development. Without federal involvement, there seems to be a high likelihood

that the current disparity among regions of the country will only continue to get worse.

Providing matching funds for technology-based economic development initiatives. While economic development occurs at the local level and states and regional organizations are in a better position to identify and address local needs, the participants suggested that the federal government should provide direct support for technology-based economic development initiatives, in part, in order to encourage more state and local investment in these activities. Participants pointed to the regions that were being left behind and those that lacked the resources on their own to address the issue as prime reasons for the federal government to provide matching funds.

#### Participating in or facilitating the creation of partnerships

Encouraging innovative partnerships of industry, government, and universities. In today's economy, collaborative partnerships between industry, universities and government are required to succeed in growing healthy technology-based economies. The federal government can serve as a catalyst using existing programs to encourage such partnerships at the state and local level.

Encouraging multi-state cooperation. The roundtable participants acknowledged that economic markets often cross state and local boundaries and more technology-based economic development efforts need to be regional in scope even if that means crossing political boundaries. But at the same time, participants pointed out that it is politically difficult to build support for and organize efforts that involve multiple political jurisdictions. It was suggested that the federal government could use its programs and offer incentives to encourage multi-state cooperation.

Working with state governments to address regional disparities. Traditionally, the federal government has provided assistance to economically distressed areas. Several of the participants indicated that while there may be booming technology regions in their state, other areas do not seem to be sharing in the technology-based growth that is occurring. The participants indicated that the federal government, working through and with state governments, should seek to help lesser-developed areas become more competitive in the new economy.

Acknowledging the role of state, county, and municipal governments as vital intermediaries. While recognizing that the federal government has an important role to play in technology-based economic development, the roundtable participants also suggested that federal policy makers should acknowledge the vital role that state, county, and municipal governments play as intermediaries to entrepreneurs and companies. Officials at these levels (and those of regional economic development organizations) are aware of local economic and political conditions at a level of detail that federal statistics cannot match. They have helpful links to business—including small business. Successful federal programs must exploit their knowledge and their networks.

# • Utilizing existing resources of the federal government in ways that would provide assistance to state and local government

Providing scientific and technical expertise. Several participants suggested that the federal government could play a valuable role by lending the scientific and technical expertise resident in some of the agencies and laboratories to the aid of state and regional development organizations. Policymakers and practitioners are confronted with a wide range of areas they can invest in, but often lack the technical expertise to judge which projects are most deserving of funding. The participants felt that federal assistance in this area could help them determine where limited resources should be invested.

Improving access to federal laboratories. Several roundtable participants suggested that significant benefits could be derived through improved access to federal laboratories. While the high quality of the work performed by the labs was acknowledged, there was general consensus that it was difficult to take advantage of the full resources they offered. Participants felt that efforts should be made to streamline access to laboratories, including improving the availability of information on research programs underway at the labs.

Collecting and disseminating economic data. The roundtable participants indicated a need for much better economic data, particularly at the firm level, to be able to make informed policy decisions. Participants suggested that more work needs to be done on identifying appropriate measures of innovation and collecting data that better reflects the realities of the new economy. Several participants commented on the challenges of defining technology companies and the delay in publication of economic data in an economy that is changing so rapidly.<sup>1</sup>

### **Guiding Principles**

With these roles in mind, participants at the roundtable identified several guiding principles for federal programs that hope to bring real change:

Recognize the diversity of states and regions. Each state and region faces its own
particular combination of development issues, and each has its own tools for
addressing these issues. Generalized solutions are not likely to succeed.

<sup>&</sup>lt;sup>1</sup> There is no consensus definition of "high technology" or "technology-intensive industry." States, localities, academic researchers, and associations have all developed their own definitions of what industries are considered high technology. A definition published in *Monthly Labor Review* in June, 1999 is used by a number of organizations. The industries that are identified as fitting the definition are selected by standard industrial classification (SIC) code, which is in the process of being replaced by the North American Industry Classification System (NAICS); consequently, a new list of "high technology" industries will have to be created with the NAICS codes. Further complicating matters is that the availability of detailed economic data lags significantly behind when the activity occurred. For example, as this report is being prepared in March, 2001, the most current *County Business Patterns* data, which provide detailed information on state and local economies, that are available on the web is from 1998.

Federal officials need to have an understanding of the unique political, historical, and economic backgrounds of the states and regions with which they will be working.

- Be flexible. Programs should be creative in meeting local needs. Federal
  officials should try to meet state and local authorities halfway in selecting
  problems to address and in carrying out the programs themselves. Undue
  administrative rigidity, for example, is counterproductive.
- Balance programs across a range of local needs. To be effective, programs must look broadly at the economic issues they are attempting to address. A balanced portfolio of programs (for example, addressing both urban and rural needs or emerging and traditional industries) will be most effective.
- Involve states in policy making. State governments should be involved routinely in developing science and technology programs at the federal level as they were in the design of the EPSCoT program and have been in the implementation of the Manufacturing Extension Partnership. Many states have developed sophisticated research and technology programs of their own. Meshing these programs with federal initiatives can produce important synergies, and the resulting efficiencies would be beneficial for the nation. For federal science and technology programs that focus explicitly on economic benefits, states and localities are vital participants.

A challenge that federal program managers face when involving states in policy making is the unique challenge of working with 50 states and the varying points of view that are expressed among state representatives. Even determining who represents the state can sometimes be difficult. However, several federal programs have been able to successfully negotiate these obstacles.

- Set high standards and impose accountability. Federal investments made in cooperation with those of states and localities should be accompanied by measures to help them maintain and improve their performance. The federal emphasis on strategic planning and measurable results as part of the Government Performance and Results Act of 1993 has given federal agencies the tools to set high standards for themselves and—more important—to measure their progress toward meeting them. These same planning tools are required by the law in federal programs that cooperate with lower levels of government. Federal programs should be designed with realistic but challenging standards of performance and outcomes. State and local partners should be helped, where necessary, to use these tools. Strong incentives should be applied for both compliance and performance.
- Require states to commit matching resources. States wishing to participate in federal-state partnerships to generate technology-based economic growth should be expected to contribute significant resources of their own. These contributions are important signals of good faith, and help ensure that the states involved will follow-through in meeting the goals of the program.

- Leverage state and local activities. Federal programs should seek, wherever appropriate, to build on the existing programs of state and local organizations. Occasionally, through a lack of awareness of local activities, federal policymakers end up duplicating or ignoring these initiatives. This observation underscores the importance of bringing state officials into the policy development process.
- Use state government as a clearinghouse for federal programs active in their states. Roundtable participants that came from state government or statewide organizations indicated that federal programs which work directly with local governments or nonprofit organizations may inadvertently support efforts that are duplicative of or even at odds with state policies and strategies. The state participants felt strongly that a mechanism should be established for informing state officials before any direct assistance is provided to development organizations within the state. It was suggested that this could involve requiring a sign off or letter of support from the Governor's office. One participant suggested that NIH's COBRA program might offer a model approach. Some of the roundtable participants that came from local organizations, however, disagreed with the state representatives and cautioned that this approach could be a problem in some states and should not necessarily be applied uniformly.
- Federal programs to assist distressed or disadvantaged areas should be targeted by region rather than by state. Roundtable participants were asked to consider whether programs to address regional disparities should be targeted to states that are underrepresented in technology-based economies or should be made available to assist distressed communities in any state. There was strong consensus that such programs should be made available to distressed or disadvantaged areas in any state.

#### III. State and Local Roles and Responsibilities

The roundtable participants suggested that state and local government have important natural advantages that can be leveraged by the federal government in supporting technology-based economic development. State and local organizations tend to be more flexible in their choices of policy instruments. They are often quicker to react to emerging opportunities. They have more direct access to academic institutions and the private sector, and fewer ideological objections to cooperating with the private sector. They are particularly attuned to small businesses.

At the same time, many state and local governments do not make the most of these advantages.

#### **State Responsibilities**

Roundtable participants identified several activities that states should do to work effectively with the federal government in promoting technology-based economic development. These items as described below can be broken into three broad categories:

## Bolster capacity for building technology-based economies

Demonstrate a commitment to technology-based economic growth. This commitment would be demonstrated, in part, by investing strategically in the fundamentals of education at all levels, in academic research programs of interest to the state's most promising business clusters, and in technology development and commercialization.

Develop and implement a strategy for expanding its technology-based economy. The strategy should be based on data gathered on, among other things, science and technology resources in the state, economic and population patterns, economic development programs already in place, and sources of finance. The strategy should also evaluate local conditions, needs, and activities, including the political constituencies, activities of local government, and the needs of business small and large.

Develop an evaluation process to measure the outcomes of its programs. The process should be based, in part, on the tools of strategic planning.

### • Participate in or facilitate the creation of partnerships

Demonstrate the ability to promote cooperation among stakeholders in the state. Successful efforts to build technology-based economies have involved strong public-private partnerships of all stakeholders. These stakeholders include businesses, academic institutions, and local government. States lacking cooperation among the key stakeholders will likely find themselves at a disadvantage when competing against others.

Proactively form consortia of universities, companies, and other sources and users of technology. Not only will these consortia give the state a foundation for technology-based growth, but also an edge in participating in federal initiatives.

Commit to sharing information. State policy makers benefit from the experiences of their peers in other states and should commit to sharing information on their programs and approaches with those peers and with relevant federal agencies

#### • Utilize existing resources

Marshal the necessary science and technology resources. States should recognize that to be successful they should draw in existing science and technology resources, not only from within the state, but also from the surrounding region, the nation, and the world.

Work to understand the federal system and processes. Recognizing that the federal government has a myriad of resources including federal laboratories that can be utilized, states should endeavor to understand the resources that are available.

#### **Local Responsibilities**

Local governments often play a critical role in the hands-on work of economic development. Roundtable participants identified several responsibilities for local governments that focused on two areas: working in partnership with others and implementing strategies. The responsibilities include:

#### Working in partnership with others

Integrate activities with those of other localities and the state and avoid duplication of effort. With increased efforts across the country by local governments to build technology-based economies and limited resources at all levels of government, local policy makers should ensure that their efforts are integrated with the activities of others. Taxpayers should not be expected to bear the cost of duplicative efforts that could be avoided through cooperation.

*Identify promising industry clusters.* With a strong knowledge of their economy, local officials are in a strong position to work with state government to identify promising industry clusters that can serve as a focal point of effort. Local officials can collect and organize detailed economic data at the firm level.

# Implementing strategies

*Deliver high-quality services.* A primary area of responsibility on the local level is ensuring that whatever services are delivered are of high-quality.

*Build local capacity.* Local policymakers can build capacity by investing in the areas of education, workforce training, business development, and sources of financing for companies.

#### **Working with Multi-State Regions**

Regional approaches (i.e., those crossing state borders) have pros and cons. (An example of such a region might be Appalachia, the Mississippi Delta, or the Chesapeake Bay watershed.) Among the advantages of regional programs is that a region may reflect the reality of the marketplace, in terms of both private sector activities and economic conditions. Programs that focus on regions allow services to be delivered where they are most needed, and they can make it easier to share information among the states involved.

On the other hand, dealing with multiple jurisdictions is complicated politically, and the governing bodies of such programs are often cumbersome. For similar reasons, service delivery is more difficult in such programs, since they must engage more than one state. Finally, multi-state regions can be at a competitive disadvantage in applying for and administering programs (for example, in competing for grants, regions—unlike states—generally do not have the necessary personnel and other resources to prepare proposals and other development activities).

Given these difficulties, federal officials should consider what additional flexibility or incentives could be built into programs to encourage submissions from multi-state regions. In today's economy, collaborative partnerships are required to grow healthy technology-based economies; in the private sector, these partnerships do not end at state boundaries and government initiatives should reflect that reality. At a minimum, federal officials should have the flexibility in their programs to encourage multi-state cooperation, particularly in response to local officials that believe that approach will work best for their region.

#### IV. Summary and Recommendations

The participants in the roundtable agreed on several broad conclusions about the federal role in promoting technology-based economic development:

A fundamental federal role in technology-based economic development exists. The federal government, working in partnership with states and localities, has a fundamental role to play in promoting technology-based economic development. This role derives from (a) the traditional federal support of research and development; (b) the various economic development programs that the federal government has evolved over the past half century; and (c) the growing awareness of the power of new applications of technology to promote economic growth.

Additionally, participants concluded that the federal government needed to have a role in technology-based economic development to ensure the economic vitality of the nation. While the U.S. economy is the envy of the world, the European Union and several Asian countries are investing significant sums in their research infrastructure and programs to strengthen the competitiveness of their companies. These efforts have the potential to threaten the U.S.'s current competitive advantage.

To a large extent, economic development has been left to the purview of the states and local government, but one consequence is that economic benefits have been spread unevenly. While it can be argued that states and localities should be making greater investments, some states and localities lack the resources to do more. Others would be prompted to act, which would benefit the nation as a whole, with incentives from the federal government.

The scope of federal activities should be relatively broad. The federal role includes—in addition to setting the national agenda and funding research—supporting the development and dissemination of "best practices," collecting and disseminating economic data, providing funding to encourage states to invest in technology-based development in general (and specifically to benefit disadvantaged areas), and encouraging multi-state collaboration.

#### **Recommended Actions**

Participants suggested that, in addition to following the guiding principles outlined earlier, the federal government should take several actions. The order in which the actions are listed below does not indicate their relative priority; participants were not asked to indicate which actions they believed were the most important.

 Convene a meeting of representatives of the federal government agencies responsible for collecting and disseminating economic data and state officials to discuss data needs and the development of new measures of innovation. A number of states have recently developed state-level technology indicator reports; representatives of these states should be convened to discuss data needs at the state and local level.

- Support a challenge grant program that encourages innovation. The participants suggested that the federal government has a role to play in encouraging states and communities to invest in the elements needed to support a technology-based economy. There was a consensus among the participants that one means of achieving this was by providing matching grants to federal funding for technology-based economic development initiatives. In addition to state and local officials, private sector representatives should be engaged in designing such an initiative.
- Investigate potential new models for supporting technology-based economic development. One roundtable participant suggested the possibility of creating a national, quasi-public corporation to fund technology-based economic development activities. The roundtable participants agreed that alternative mechanisms for providing support for state and local technology-based economic development should be considered.

### Appendix A. List of Roundtable Participants and Attendees

**Participants:** 

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Progressive Policy Institute

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Washington Technology Center

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Sheri Stickley

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Charles Weir

**Institute for Technology Development** 

Moderator:

Dan Berglund

State Science and Technology Institute

**Attendees:** 

Dr. Cheryl Shavers

Under Secretary of Commerce for

Technology

**Kelly Carnes** 

Assistant Secretary for Technology Policy

Robert Maher

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Jon Paugh

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### **Appendix B. Discussion Topics and Questions**

Currently, some states are pouring millions of dollars into improving their science and technology capabilities (e.g., New York has appropriated \$145 million for the New York State Office of Science, Technology, and Academic Research; Michigan has allocated \$1 billion over 20 years to develop a life sciences corridor), while other states are investing little to build a tech-based economy (e.g., Wyoming has significantly limited its activities). At the same time, as evidenced through new programs and strategic planning activity occurring in St. Louis, Chicago, Indianapolis, and New York City, more localities are trying to build tech-based economies. Finally, there are indications of a growing divide within states of areas that are benefiting from the New Economy and those that are being left behind.

Given this background, please be prepared to discuss the following questions:

- what is the appropriate federal role in technology-based economic development?
- · ideally, what should it include beyond providing funds?
- what do different models tell us about the appropriate balance of responsibilities between federal, state and local government entities?
- should federal efforts be focused on states that need the most help or on regions that need the most help?
- are the most effective efforts those that are narrowly focused (either by topic or geography)?
- where are federal efforts likely to have the greatest impact?

#### **Regional Focus**

Regional economies do not fit neatly within state lines, and emerging clusters are often concentrated in specific metropolitan areas. There are an increasing number of actors in technology-based economic development with more local governments creating programs and an increasing number of non-profit and for-profit initiatives outside of state and local government starting operations. However, the federal government has a mixed record of balancing relationships between state, local, and non-governmental organizations.

Given this background, please be prepared to discuss the following questions:

- what are the advantages and disadvantages of models that provide funding to sub-state regions?
- can or should the federal government complement statewide efforts by focusing on underserved areas?
- what are the advantages and disadvantages of models that use multi-state regions?
- should the federal government provide incentives to states to work together?